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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,361	02/26/2004	Matthew E. Hansen	1857.1460001	3420

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EXAMINER	
LEE, HWA S	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 01/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/786,361	HANSEN, MATTHEW E.	
	Examiner	Art Unit	
	Andrew Hwa S. Lee	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *response of 10/27/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-26 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-26 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/2/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Remarks

This Office Action is in response to Applicant's reply of 10/27/04. Claims 1-26 are pending.

The Information Disclosure Statement of 9/2/04 has been considered.

Claim Objections

Claim 14 is objected to because of the following informalities: The word "tilting" appears to have been misspelled as "tiling". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 12 and 13 recite the limitation "the optical axis". There is insufficient antecedent basis for this limitation in the claim. It is unclear if "the optical axis" is the optical axis of the reticle, optical system, image volume, or the image plane.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686

F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

1. **Claims 1-26** are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-28 of copending Application No. 09/339,506. Although the conflicting claims are not identical, they are not patentably distinct from each other because the difference in the claims is the use of different terms but are defined the same where claim 1 of 09/339,506 is combined with claim 10 of 09/339,506. For instance, "image of the plurality of periodic pattern" is the same as "an interference pattern."

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

2. **Claims 1-26** are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 40-57 and 60-64 of copending Application No. 09/907,902. Although the conflicting claims are not identical, they are not patentably distinct from each other in that the pending claims are broader. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. **Claims 1-13, 15-17, 24, and 26** are rejected under 35 U.S.C. 102(e) as being anticipated by Kataoka et al (US 5,814,425 cited by Applicant in IDS of 5/5/04).

For **claims 1, 8, 10, and 26**, Kataoka et al (Kataoka hereinafter) show a method of measuring aberration of a projection optical system comprising:

illuminating (215) more than one periodic pattern (Figures 4 and 5) in an object (W) plane of the optical system;

using the optical system to image (for instance column 5, lines 22+) the periodic patterns onto an image volume and also where the image plane is angled at 0 degrees from the reticle plane (for instance column 5 lines 19+. In addition, the limitation of "an image volume" has not be set forth to where the boundaries of the volume is, nor to exclude a simple plane.);

analyzing an interference pattern in an image of the periodic patterns formed within the image volume (108, column 4, line 51 to column 5, line 11 and column 5 lines 23+) , whereby optical system characteristics are determined from the interference pattern.

With regards to **claims 2-7 and 9**, please see Figure 4.

With regards to **claims 11-13**, please see column 7, line 61.

With regards to **claim 15**, please see column 5, lines 25+.

With regards to **claim 16**, please see column 7, lines 42+.

With regards to **claim 17**, please see column 8, lines 2+.

With regards to **claim 24**, the act of analyzing calculates the best focus position (column 7, line 19).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 20 and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka as applied to claim 10 above, and further in view of Kirk et al ("Application of blazed gratings....." cited in Applicant's IDS).

Kataoka shows all the claimed steps except for the use of a dark field microscope for examining the recorded image.

Kirk et al show the use of a white light dark field microscope for examining a recorded image in determining aberrations in an optical system.

At the time of the invention, one of ordinary skill in the art would have been motivated to use a white light dark field microscope in order to examine the recorded image with high accuracy.

6. **Claims 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka as applied to claim 10 above, and further in view of Sawartari et al (US 5,923,423).

Kataoka shows all the claimed steps except for the use of a laser microscope interferometer.

Sawatari et al show a laser microscope interferometer.

At the time of the invention, one of ordinary skill in the art would have used a laser microscope interferometer in order to examine the recorded image with high accuracy because Sawatari et al teach that the laser microscope interferometer has a high accuracy to 0.1 nm.

7. **Claim 23** is rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka as applied to claim 10 above, and further in view of Biegen (US 4,732,483).

Kataoka shows all the claimed steps except for the use of an interferometer with a large aperture.

Biegen teaches an interferometer having a large aperture.

At the time of the invention, one of ordinary skill in the art would have used the interferometer of Biegen in order to examine the recorded image with high accuracy as taught by Biegen. Furthermore, one of ordinary skill would have deduced that the use of a large aperture would allow the measurement to be performed with a fewer number of measurements if the sample (recorded image) was large and would have also taken just one measurement to measure the whole sample since one of ordinary skill in the art would understand that taking one measurement saves time versus taking several measurements.

Response to Arguments

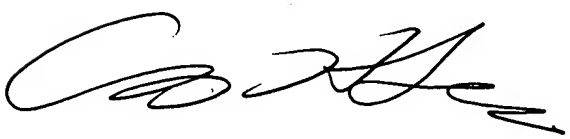
Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa S. Lee whose telephone number is 571-272-2419. The examiner can normally be reached on Tue-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on 571-272-2800 ext 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Andrew Hwa S. Lee
Examiner
Art Unit 2877